

4.0 AFFECTED ENVIRONMENT

The following sections provide a discussion of the existing environment that would be affected by the proposed action and alternatives.

4.1 GENERAL HANFORD SITE ENVIRONMENT

The Hanford Site, about 586 square miles (1,517 square kilometers), is located in southeastern Washington State in a semiarid region with rolling topography. Two topographical features dominate the landscape: Rattlesnake Mountain located on the southwest boundary and Gable Mountain located on the northern portion. The Columbia River flows through the northern part and forms part of the eastern boundary of the Hanford Site. Areas adjacent to the Hanford Site primarily are agricultural lands.

Designations for land use on the Hanford Site for the next 50 years were established in DOE/EIS-0222-F. These designations include preservation, conservation, industrial, and research and development. On June 9, 2000, the Hanford Reach National Monument was established (65 FR 37253) covering 195,000 acres (78,900 hectares). The Hanford Reach National Monument incorporates a portion of the Columbia River corridor, the Fitzner-Eberhardt Arid Lands Ecology Reserve to the south and west, the Wahluke Slope, and the McGee Ranch area. Establishment of the monument recognizes the unique character and biological diversity of the Hanford area, as well as its geological, paleontological, historic, cultural, and archaeological importance.

The Hanford Site has a mild climate with 6 to 7 inches (15 to 18 centimeters) of annual precipitation, with most of the precipitation taking place during the winter months. Temperature ranges of daily maximum temperatures vary from 36°F (2°C) in early January to 95°F (35°C) in late July. Monthly average wind speeds are lowest during the winter months, averaging 6 to 7 miles (10 to 11 kilometers) per hour, and highest during the summer, averaging 8 to 10 miles (14 to 16 kilometers) per hour (PNNL-6415). Tornadoes are extremely rare in the region surrounding the Hanford Site.

During calendar year (CY) 2000, Hanford Site air emissions remained below all established limits set for regulated air pollutants (PNNL-13487). Atmospheric dispersion conditions of the area vary between summer and winter months. The summer months generally have good air mixing characteristics. If the prevailing winds from the northwest are light, less favorable dispersion conditions might occur. Occasional periods of poor dispersion conditions occur during the winter months.

On June 27, 2000, a fire known as the 24 Command Fire, spread rapidly and eventually consumed 163,884 acres (66,322 hectares) of federal, state, and private lands. A total of 60,254 acres (24,384 hectares) within the Hanford Site burned, including areas in and around the HAMMER expansion. Fire suppression impacts included construction of 41 miles (66 kilometers) of bulldozed fire lines, widened dirt roads, and cut fences (DOI 2000).

The vegetation on the Hanford Site is a shrub-steppe community of sagebrush and rabbitbrush with an understory consisting primarily of cheatgrass and Sandberg's bluegrass. The typical insects, small birds, mammals, and reptiles common to the Hanford Site can be found on HAMMER (PNNL-6415). Relatively undisturbed areas of the mature shrub-steppe vegetation are high quality habitat for many plants and animals and have been designated as "priority habitat" by Washington State.

Most mammal species known to inhabit the Hanford Site are small, nocturnal creatures, primarily pocket mice and jackrabbits. Large mammals found on the Hanford Site are deer and elk, although the elk exist almost entirely on the Fitzner-Eberhardt Arid Lands Ecology Reserve. Coyotes and raptors are the primary predators. Several species of small birds nest in the steppe vegetation. Semiannual peaks in avian variety and abundance occur during migration seasons. Additional information concerning the Hanford Site can be found in PNNL-6415.

DOE-RL and its contractors dominate the local employment picture with almost one-quarter of the total nonagricultural jobs in Benton and Franklin Counties. Ninety-three percent of Hanford Site personnel reside in the Benton and Franklin County areas. Therefore, work activities on the Hanford Site play an important role in the socioeconomics of the Tri-Cities (Richland, Pasco, and Kennewick) and other parts of Benton and Franklin Counties (PNNL-6415). Other counties are less affected by changes in Hanford Site employment.

4.2 SPECIFIC SITE ENVIRONMENT

HAMMER is adjacent to the city limits of Richland, Washington, and on the north side of Horn Rapids Road about 3 miles (4.8 kilometers) from the Columbia River, and is above the 100-year floodplain, and has no identified wetlands.

4.2.1 Soil and Subsurface

The soil of HAMMER expansion area is predominately coarse brown-to-grayish-brown sand, and found under grass, sagebrush, and hopsage in coarse sandy alluvial deposits mantled by wind-blown sand. The geologic strata under the surface layer, in descending order, are Holocene eolian deposits, Hanford formation, Ringold Formation, and the Columbia River Basalt Group. The eolian sands are fine- to coarse-grained, and relatively quartz- and feldspar-rich. Deposits of the Hanford formation underlie the eolian deposits. Deposits typical of the gravel-dominated facies consisting of uncemented granule to cobble gravels and minor coarse-grained sand generally dominate Hanford formation strata. The top of the Ringold Formation underlies this. Basalt flows of the Columbia River Basalt Group and intercalated sediments of the Ellensburg Formation underlie the Ringold Formation. The region is categorized as one of low to moderate seismicity (PNNL-6415).

4.2.2 Hydrology

The water table in the HAMMER expansion area is approximately 374 feet (114 meters) to 387 feet (118 meters) below the surface (PNNL-6415).

4.2.3 Air Resources

The Hanford Site operates under a Prevention of Significant Deterioration (PSD) permit established by the U.S. Environmental Protection Agency (EPA), which is designed to protect existing ambient air quality. Except for automobiles and trucks, there are no discharge points for air pollutants at HAMMER.

4.2.4 Plants and Animals

An updated Hanford Biological Review [ERC #2001-600-030-B (Appendix. B)] was conducted for the proposed action. Much of the expansion area was burned during the 24 Command Fire in June 2000, resulting in a substantial reduction in the proportion of shrub cover present. The burned area is now dominated by cheatgrass (*Bromus tectorum*) and Sandberg's bluegrass (*Poa secunda*). A relatively high diversity of forbs and some sprouting bitterbrush (*Pursia tridentate*) also are present. The small unburned, remaining portions of the expansion area contain mature shrubs including big sage (*Artemisia tridentate*), bitterbrush, and snow buckwheat (*Eriogonum niveum*).

Three burrowing owls (*Athene cunicularia*) were flushed and a single active burrow was located. Three western meadowlarks (*Sturnella neglecta*), one loggerhead shrike (*Lanius ludovicianus*), and one horned lark (*Eremophila alpestris*) also were observed in the expansion area. No plant or animal species protected under the *Endangered Species Act* (ESA) of 1973, were observed in the vicinity of the proposed action.

4.2.5 Cultural Resources

A Hanford Cultural Resources Review [#2001-600-030 (Appendix A)] was conducted for the proposed action. The review concluded that, "... no historic properties will be adversely affected by this undertaking, provided the project maintain a 100 meter buffer between project ground disturbing activities and the Yakima Irrigation ditch. Since the project area is located in undisturbed ground, a slight potential exists for historic properties to be located below ground in the vicinity of the Yakima Irrigation Ditch. On August 12, 2001, the State Historical Preservation Officer (SHPO) concurred (Appendix A) with this review.

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